Periscope.

With the Assistance of the Following Collaborators:

Chas. Lewis Allen, M.D., Wash., D.C.
J. S. Christison, M.D., Chicago, Ill.
A. Freeman, M.D., New York.
S. E. Jelliffe, M.D., New York.
Wm. C. Krauss, M.D., Buffalo, N.Y.
W. M. Leszynsky, M.D., New York
R. K. Macalester, M.D., N.Y.
J. K. Mitchell, M.D., Phila., Pa
H. Patrick, M.D., Chicago, Ill.
Joseph Sailer, M.D., Phila., Pa.
Henry L. Shively, M.D., N. Y.
A. Sterne, M.D., Indianapolis

ANATOMY.

78. Eine Goldfärbung des Nervenmarkes (Staining the Axis Cylinders of Nerves by Gold). M. v. Frey (Archiv f. Anatomie u. Entwicklungsgeschichte, 1897, Supplementband, Dec., p. 108).

The author describes a method which has proven of service to him in the tracing of nerve fibres in the skin, mucous membrane and viscera.

Small pieces of tissue are allowed to lie for two weeks in a 2 per cent. aqueous solution of ammonium bichromate, at a temperature of from 1—5 deg. C. They are then carefully washed in running water for ten or fifteen minutes and placed in a 1 per cent. solution of chloride of gold to which 1 per cent. hydrochloric acid has been added. The length of time required in this solution is determined in large part by individual experiment. The specimens are then washed slightly and the reduction of the gold effected by a one-fiftieth per cent. aqueous solution of chromic acid. Specimens can be cut after twenty-four hours of reduction. The superfluous gold may be removed by sodium hyposulphite solution.

The nerve fibres are stained a bluish green to a bluish black if properly impregnated. Jelliffe.

79. Zur Kenntniss der peripheren Gehörleitung (On the Peripheral Acoustic Conducting Paths). H. Held (Archiv f. Anatomie u. Entwicklungsgeschichte, 10, 1897, p. 350).

The author holds that the fibres of the ring plexus of the spiral ganglia are collaterals of the peripheral branches of the cochlearis cells; they end in the hair cells of Corti's organ, and again give off from each, collaterals which run forward to other hair cells. Thus hair cells from different parts of Corti's organ are brought into communication with one ganglion cell.

80. Die Nervenendigungen an den Tasthaaren von Säugethieren (The Nerve Endings of the Tactile Hairs in Mammals). E. Botezat (Archiv f. mik. Anat., 50, 1897, p. 142).

The nervous fibres going to the taste follicles are described by the author as being disposed in two sets—a deep and a superficial. The first forms a complicated plexus, by frequent and irregular anastomoses, of varicose fibres pursuing an undulating path and surrounding the base of the root sheath, and the basal thickening of the papillæ. The superficial layer consists of ascending longitudinal fibres, which cover the preceding. The fine axis cylinders which come from these two series of fibres traverse the vitreous membrane, and form thick plaques about the tactile cells of Merkel. These plaques are somewhat meniscus shaped; they are not the true nerve terminations, however; these are found as very minute and delicate axis cylinder prolongations, which end between the cells. VOGEL.

81. OBSERVATIONS ON SENSORY NERVE-ENDINGS IN VOLUNTARY MUSCLES. A. Ruffini (Brain, 20, 1897, p. 368).

A series of notes is here presented dealing with muscle spindles, tendon organs and Pacinian corpuscles found in muscles. The general conclusions to be derived from the author's paper are:

1. There are in the voluntary muscles nerve fibres of three kinds—motor, sensory and vaso-motor.
2. The motor nerve fibres end, as is well known, in the *end plates* of Rouget and Kühne.
3. The sensorial nerve fibres possess three quite distinct end organs in man and in all the higher vertebrata. These sensorial end organs of muscle are: (a) The muscle spindles, (b) the tendon organs (or Golgi organs) and (c) Pacinian corpuscles.
4. The vaso-motorial nerve fibres form reticular plexuses or true terminal plates (Mazzoni), or terminate simply on the capillary walls with a fine apical enlargement (Ruffini).
5. The functions of the motor plates and vaso-motorial endings has been known for years. Further, physiological experimentation is now wanted to investigate the functional activities of the three sensorial organs, the spindles, the tendon organs, and the Pacinian corpuscles. In the author's opinion it is to these three kinds of sense organs that physiology must turn its attention if it will resolve the problem of the muscular sense. JELLIFFE.

PATHOLOGY.

82. THE MUSCLE SPINDLE UNDER PATHOLOGICAL CONDITIONS. Fred E. Batten (Brain, 20, 1897, p. 138).

The author treats of the following subjects in this paper: The history of the researches made upon the muscle spindle, the various views held with regard to its origin and function, the technical methods employed in the research, the histology of the spindle as found in man, and its modifications in the following diseases: Infantile paralysis, tabes, myopathy, progressive muscular atrophy, peripheral neuritis, trauma of brachial plexus and following sciatic nerve section.

In these various diseases, *seriatim*, the author states:

In infantile paralysis it would seem probable that the muscle spindle remains absolutely intact, both in regard to the intra-fusal muscle fibres and in regard to the contained nerves.

In tabes, in two cases of three examined, the spindles were normal; in a third there was a mild grade of degeneration.

In myopathy (Leyden form) the spindles seemed increased in number, but there were no traces of degeneration, or other change.

In progressive muscular atrophy the author's observations are in accord with those of other writers who find no changes in the muscle spindle.

In peripheral neuritis, in one case only examined, there were no changes in the muscle spindles.

In injury to the brachial plexus, with loss of motion and sensation of a year's standing there was an atrophy of the muscle spindle.